Interaction of $F=2$ Spinor Bose Condensate with Driven External Magnetic Fields

JIAO Zhi-Yong,[1] TANG Lian,[2] and YU Zhao-Xian[1]

[1] Department of Applied Physics, University of Petroleum (East China), Dongying 257061, China
[2] Department of Mathematics and Physics, University of Petroleum (Beijing), Beijing 102249, China

Abstract: We have studied the interaction of $F=2$ spinor Bose condensate with a combination of static and sinusoidal magnetic field $b_l(t)=b_0+b\cos(\omega t)$. We find that the tunneling current among spin 0 and spin ±1, spin 0 and spin ±2, spin ±1 and spin ±2 may exhibit the incremental oscillation behavior, which depends on the field parameters of the reduced amplitudes of the transverse and the longitudinal magnetic fields respectively. This means that the dynamics spin localization can be adjusted experimentally by selecting the less values of the reduced amplitudes of the transverse magnetic field b_x/ω and those of the longitudinal magnetic field b/ω.

[Full text: PDF]

Close